



US DEPARTMENT OF DEFENSE

BLAST INJURY RESEARCH PROGRAM COORDINATING OFFICE

Health Outcomes and Long-Term Care Following Extremity Injury

Biological Approaches to Improve Functional Recovery After Compartment Syndrome

Compartment syndrome leading to non-healed fractures, volumetric muscle loss, or amputation are potentially devastating complications of severe extremity injury to the Service Member. Researchers at Wake Forest University, with funding from USAMRMC, are investigating improved treatments for extremity injury and compartment syndrome using human muscle progenitor cell therapy (hMPC) to regenerate limb tissues, along with an adjunctive pharmacologic approach to inhibit fibrosis and scarring. In FY15, researchers demonstrated in a rodent model of extremity injury and compartment syndrome that treatment with an angiotensin receptor blocker (losartan)—used to treat hypertension and heart failure—showed significant improvement in muscle regeneration and decreased scarring. In a muscle injury model in immunocompromised rats, three preparations of hMPCs were injected into injured muscle, with promising results. A human study of losartan is expected in the next one to two years. This line of investigation offers a promising adjunctive approach to improve outcomes in extremity trauma complicated by compartment syndrome, a leading cause of morbidity among wounded Service Members.